

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 April 2001 (05.04.2001)

(10) International Publication Number
WO 01/23955 A3

(51) International Patent Classification⁷: **G02F 1/225, G02B 6/12**

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(21) International Application Number: **PCT/US00/25867**

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW.

(22) International Filing Date: 21 September 2000 (21.09.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 60/155,287 21 September 1999 (21.09.1999) US

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(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

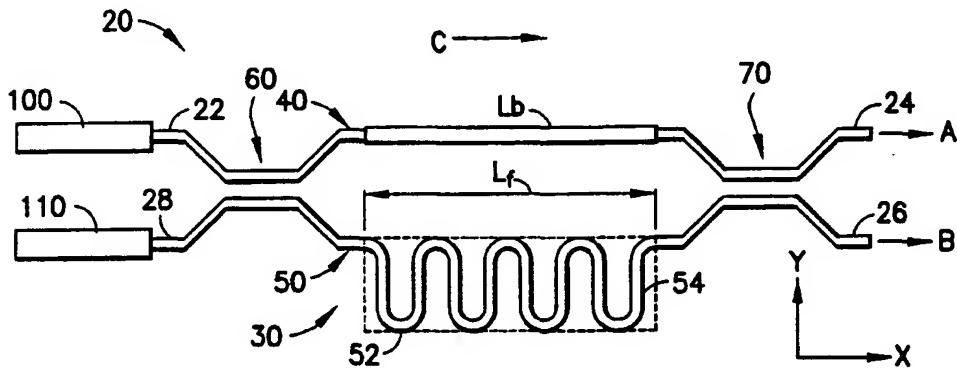
(88) Date of publication of the international search report: 18 October 2001

[Continued on next page]

(54) Title: A NANOPHOTONIC MACH-ZEHNDER INTERFEROMETER SWITCH AND FILTER



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(57) Abstract: A nanophotonic Mach-Zehnder interferometer (MZI) (20) device having at least one arm (50) which has an actual length greater than its virtual length (L_v). An arcuate section (52) is provided in at least one arm (50) (thus providing a "meandering arm") to increase the actual length of that arm without increasing its virtual length (L_v) and without compromising the ability of that arm to effect a π phase shift in an optical signal propagating therein. By constructing the MZI device of strongly confined waveguides, which may be either photonic-well or photonic-wire devices, the low bending loss characteristics of such waveguides enable the use of an arcuate section (52) or bend in the waveguide without experiencing undesirable losses in the optical signal. The actual length of the arm and the optical length are equivalent to those for prior art devices and sufficient to introduce the desired phase shift. In contrast to prior art devices, however, the present invention provides those sufficient actual and optical lengths in a significantly reduced length on the chip (i.e., its virtual length) that requires less on-chip real estate and thus provides for denser integration of a plurality of optical devices in an optical component.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 00/25867

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G02F1/225 G02B6/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G02F G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 5 289 256 A (GRAMLING HUBERT) 22 February 1994 (1994-02-22)	1-5, 7, 10-14, 18-22, 26-30
Y	column 3, line 59 -column 4, line 19 column 5, line 42 - line 64 column 7, line 22 -column 60 column 9, line 3 - line 53; figures 3-5 ----- -/-	8, 9, 16, 17, 24, 25, 32, 33

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the international search

Date of mailing of the international search report

11 April 2001

26/04/2001

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/25867

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